LineUp With Math™
Air Traffic Control Simulator

How to Introduce the Simulator to Teachers and Students in 5 Minutes

www.atcsim.nasa.gov

3/4/08

Getting Started—Part 1 of 5

- The Smart Skies™ "LineUp With Math™" Simulator can be demonstrated to students, teachers, parents, chapter leaders, etc.

- A brief demonstration (such as at a booth in a show) will:
  - Introduce Air Traffic Control (using an animation of a day in the life of the National Airspace System)
  - Introduce the Air Traffic Control sector layout.
  - Run and solve a representative Simulator problem.
  - Demonstrate the Simulator controls.
  - Demonstrate tactics for analyzing and solving air traffic control problems.
  - Demonstrate proportional reasoning for a simple speed change.

Getting Started—Part 2 of 5

- Visit www.atcsim.nasa.gov
- Open the Simulator in a browser window
  - For venues with a reliable Internet connection, click the link “Air Traffic Control Simulator” to run the Simulator in your browser.
  - For venues **without** an Internet connection, you can download a “demo” version of the Simulator:
    - click the button “Download a Demo Version”.
    - follow the directions to download and open the ***latest version*** of the demo Simulator.

Getting Started—Part 3 of 5

- If you wish, you can support your Simulator demo with 2-3 QuickTime movies
- To open the first 2 movies, visit www.atcsim.nasa.gov
- Click the Videos button in the navigation bar at the top of the page
  - Download and open the movie “Animation of 24 hours of flight in the U.S.”
  - Download and open the movie “Welcome to Sector 33”
- You can also supplement this demo with the movie “SmartSkies™DemoProb3-8” included in this support package.

Getting Started—Part 4 of 5

- Online support for the Simulator:

  Visit www.atcsim.nasa.gov for

  - Simulator Quick Start Guide
  - Animated Simulator Tutorial

- Student workbooks and teacher support materials are free and available online at: www.smartskies.nasa.gov/flyby

- Contacts:

  - Bill Preston – Air Traffic Control Specialist
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  - Miriam Landesman – Education Lead
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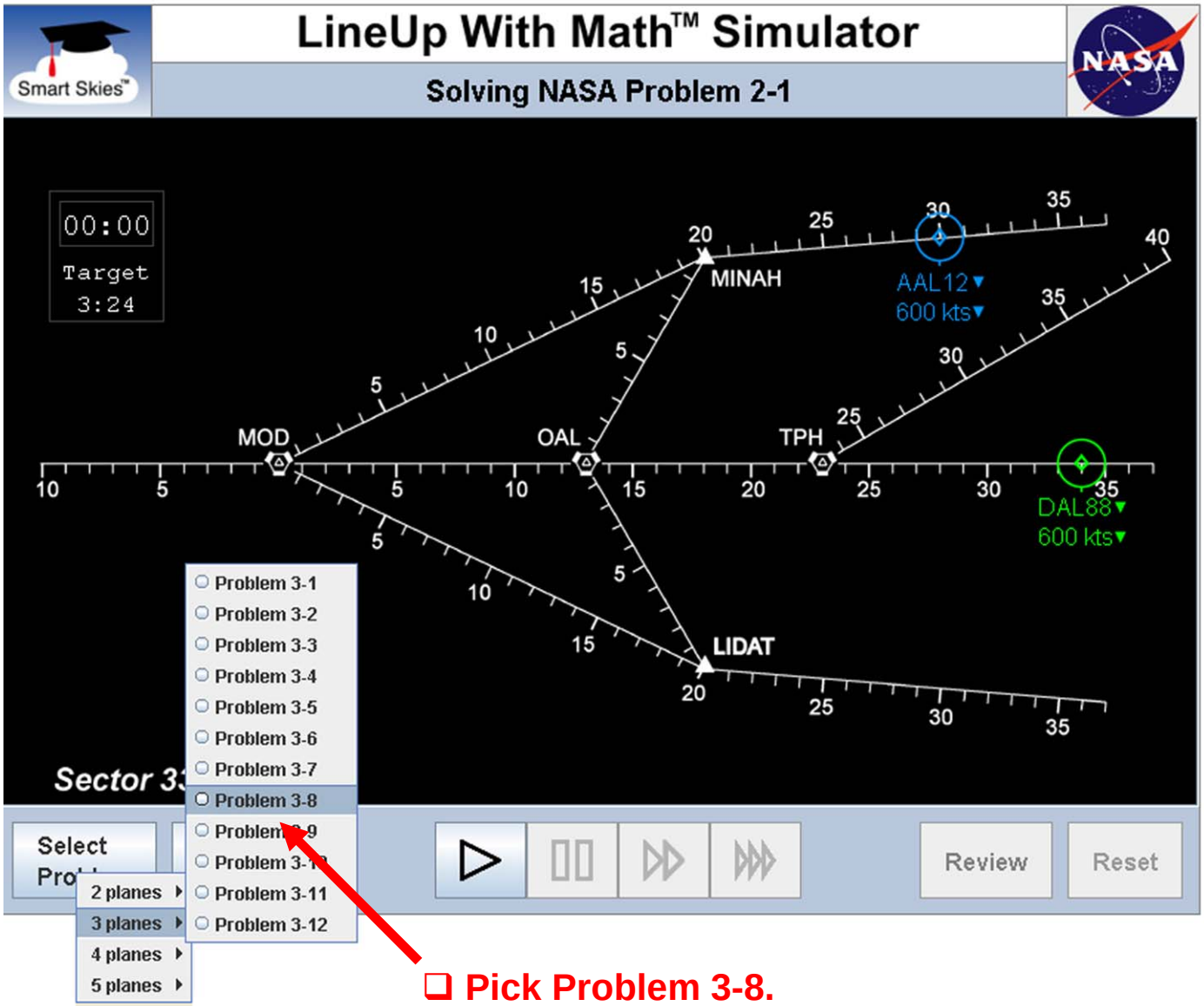
Getting Started—Part 5 of 5

NOTE:

The following slides are NOT meant for presentation to students.

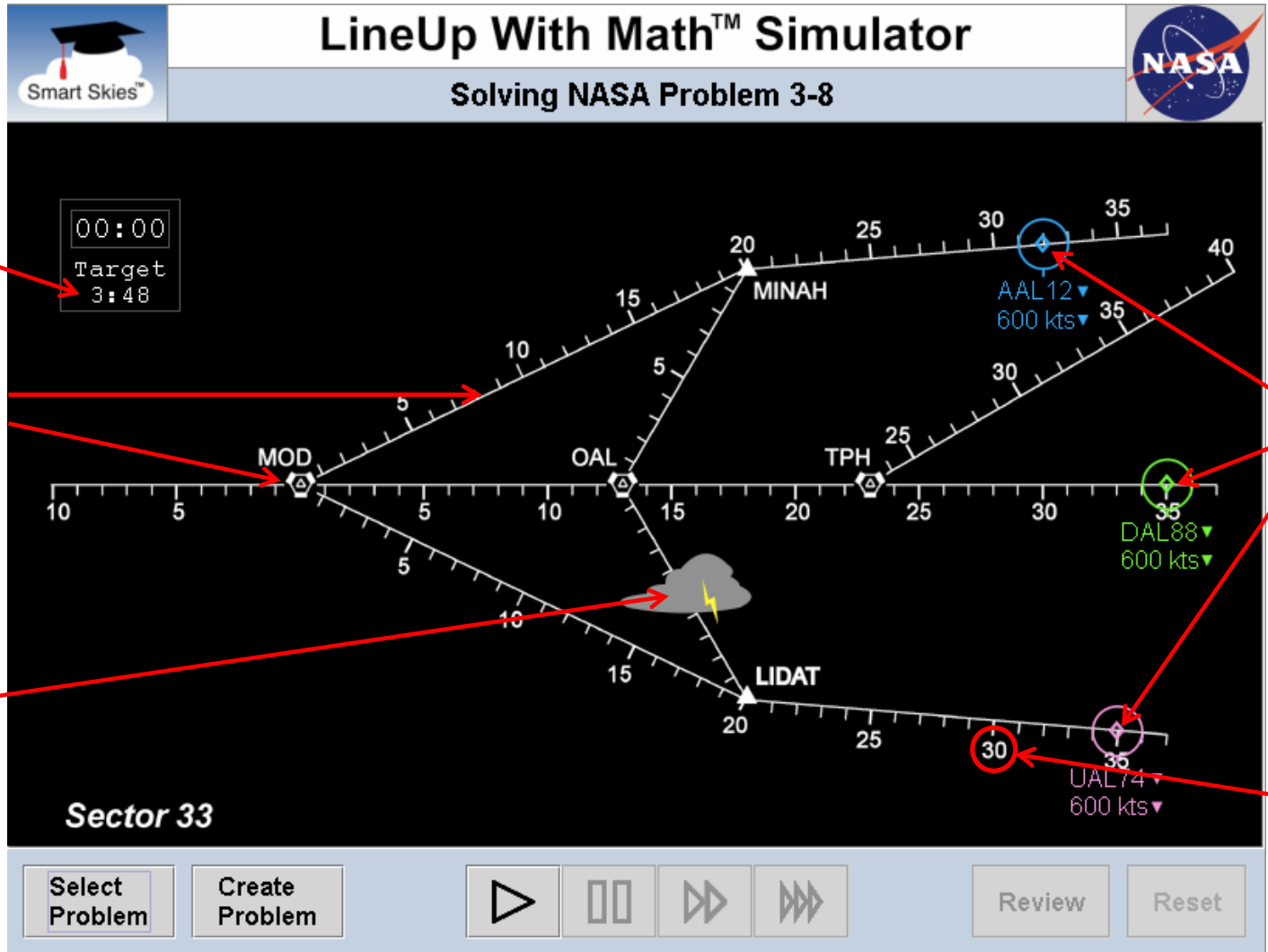
Rather, they can serve as an illustrated checklist to guide you as you demonstrate the Simulator.

1. Select a Problem



❑ Pick Problem 3-8.

2. Introduce Problem 3-8



Target time

Routes and Intersections

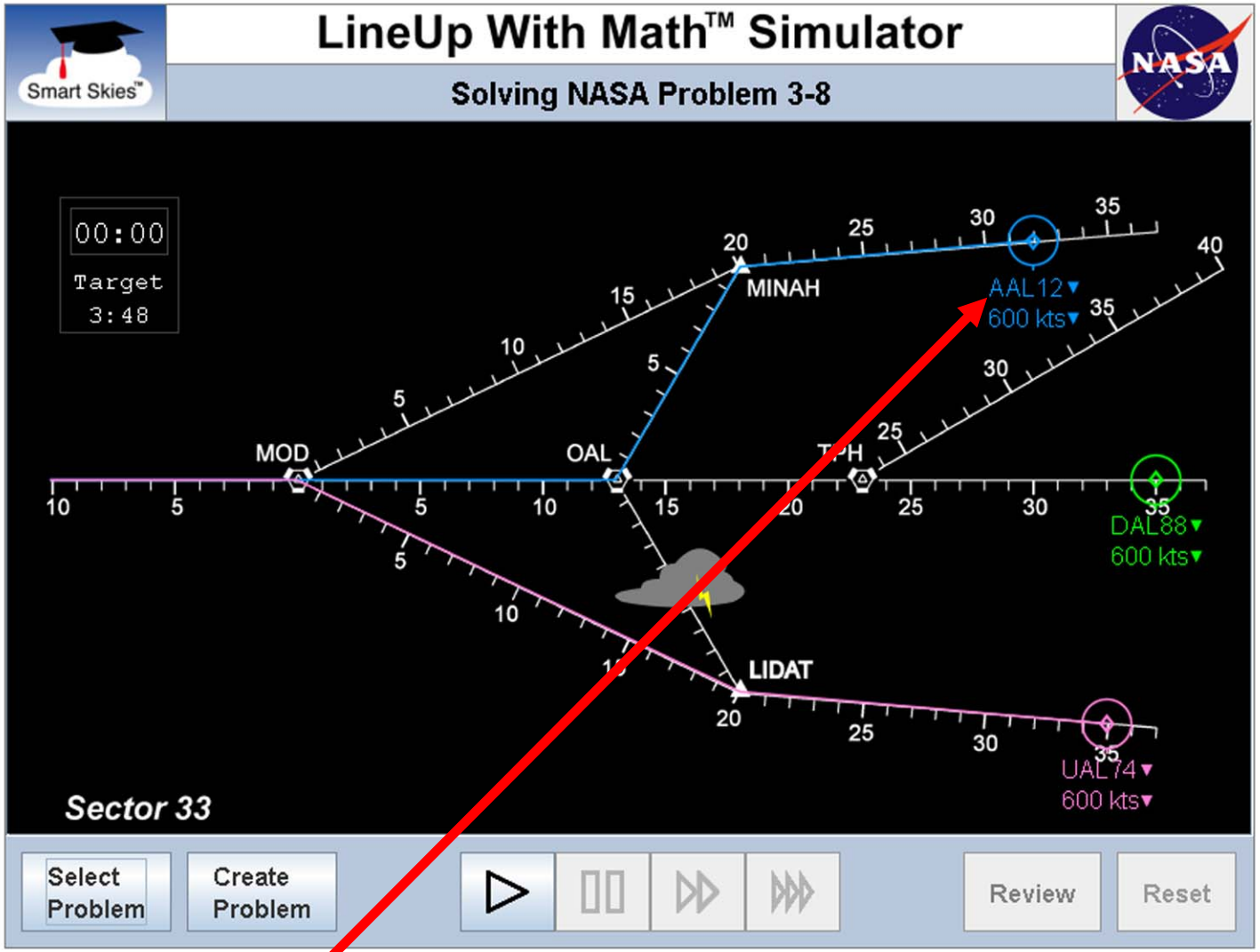
Cloud (blocked route)

Planes

Mileage markers

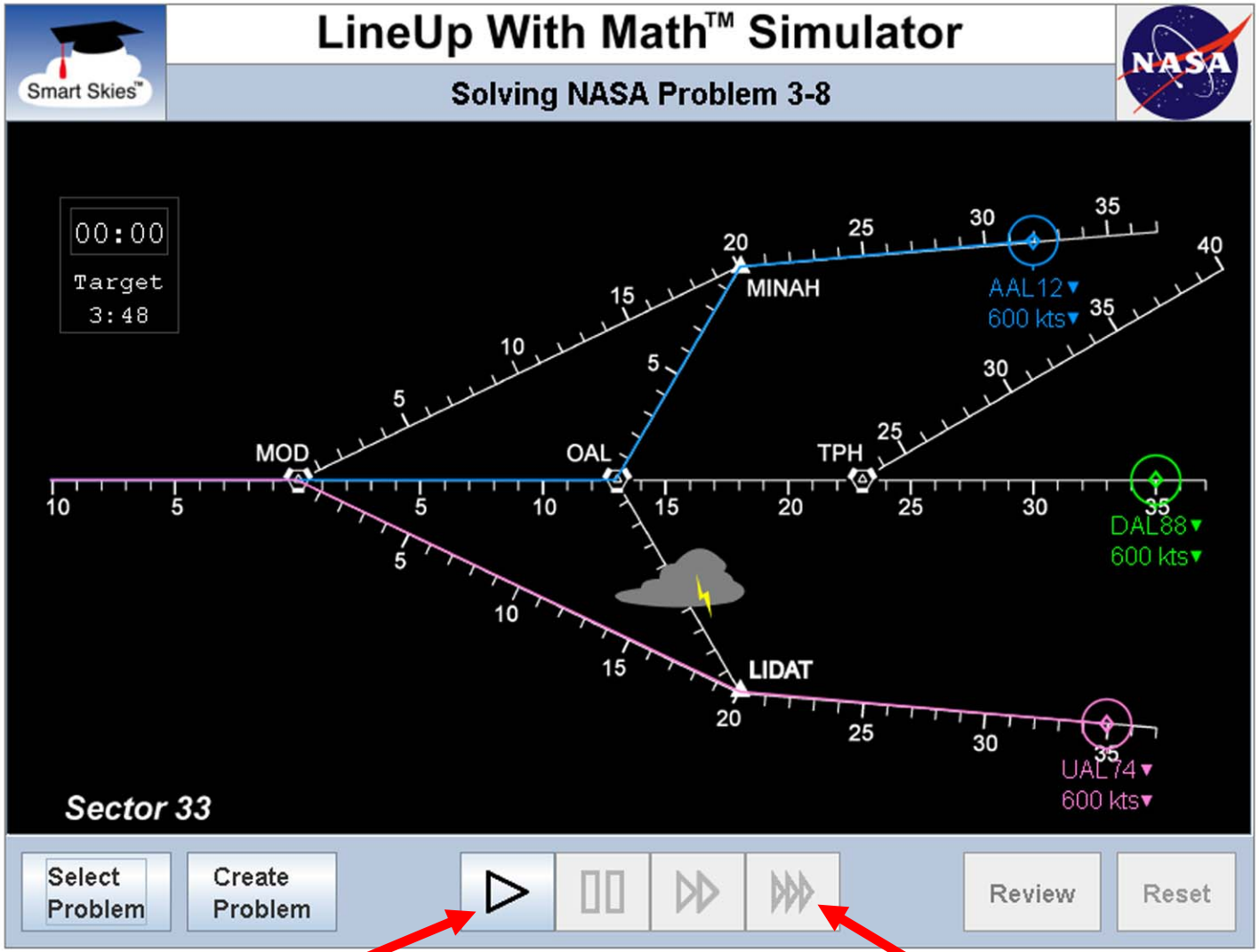
- Scenario: Three aircraft bound for SFO merging over MOD.
- Goal: Achieve 3 NM spacing with the last aircraft at MOD by 3:48.
- Strategy: Identify conflicts. To resolve, change plane route(s) or speed(s).

3. Display the Routes



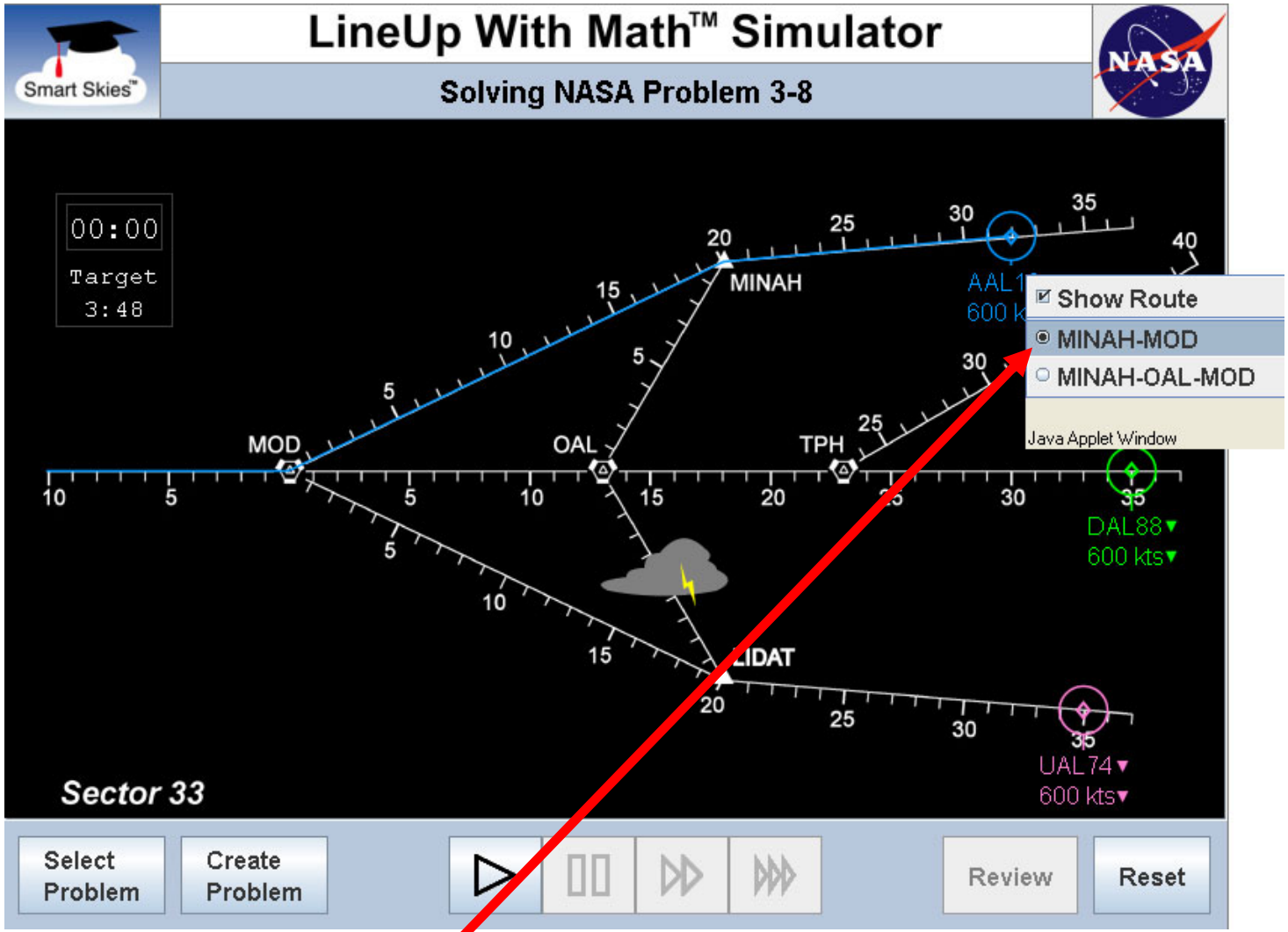
- ❑ Click callsign(s) to display route(s).
- ❑ Note: Each plane is 35 NM flying distance from MOD.
- ❑ There is a conflict (more than one)!

4. Run the Problem



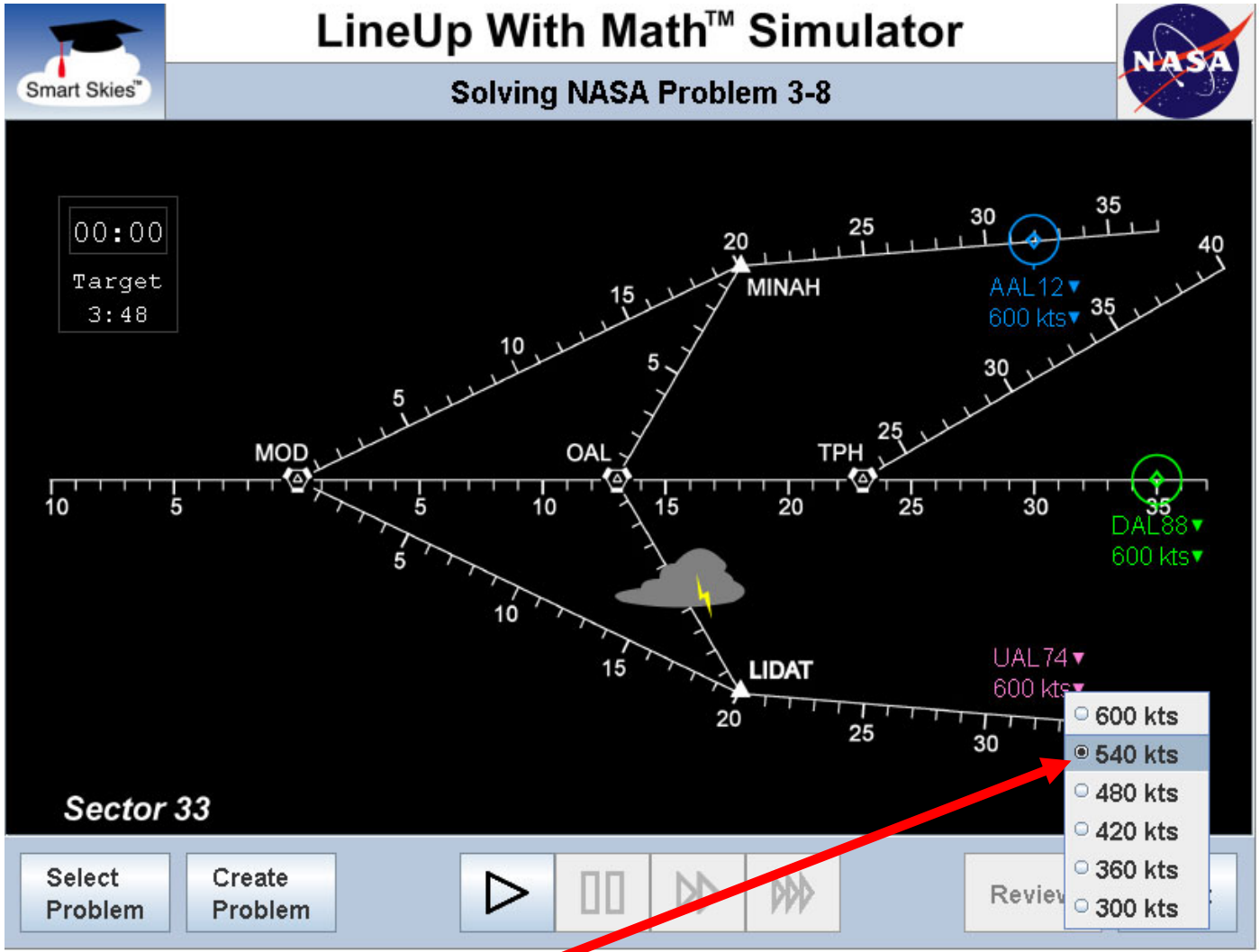
- Run the Simulator to demonstrate the conflicts.
- Once the problem begins to run, can use the fast-forward mode.

5. Change a Route



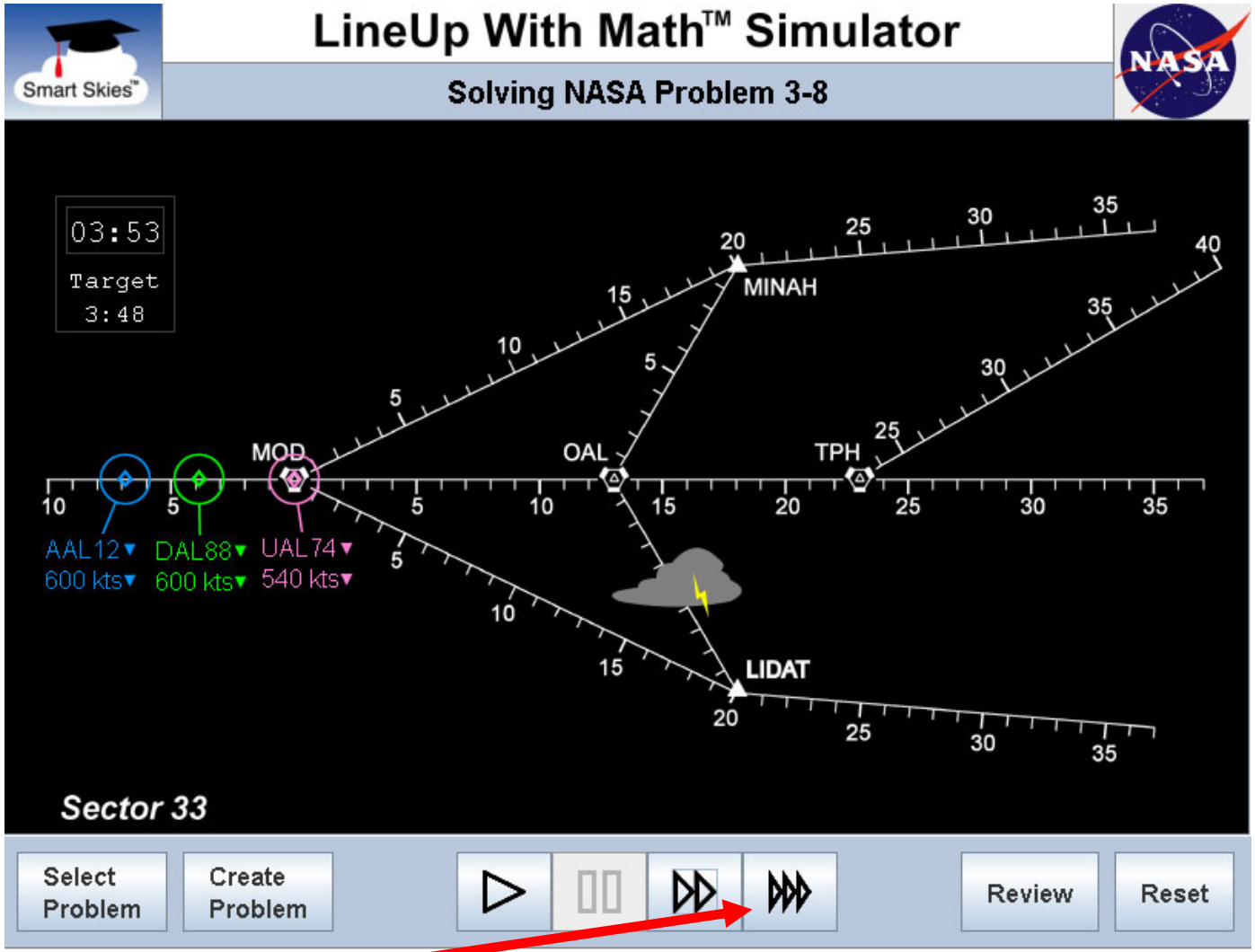
- Discuss, then change route of AAL12 to shorten distance to MOD by 3 NM (which is target spacing at MOD).
- Note: AAL12 is 3 NM closer to MOD than DAL88.

6. Change a Speed



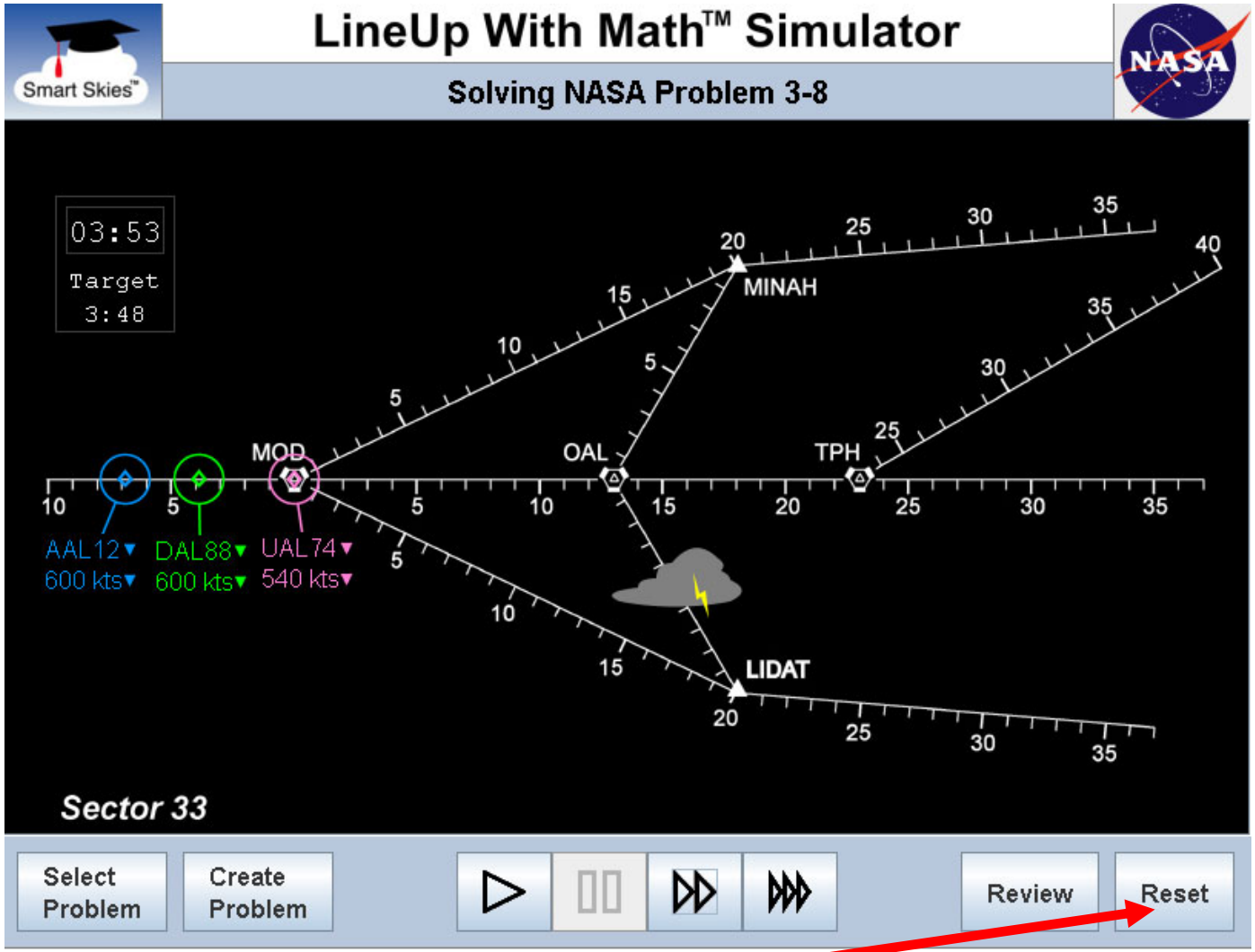
- Discuss, then reduce speed of UAL74 to try to get 3 NM spacing behind DAL88 at MOD. Try 540 knots.
- Run the Simulator at normal speed.

7. Note the Results at MOD



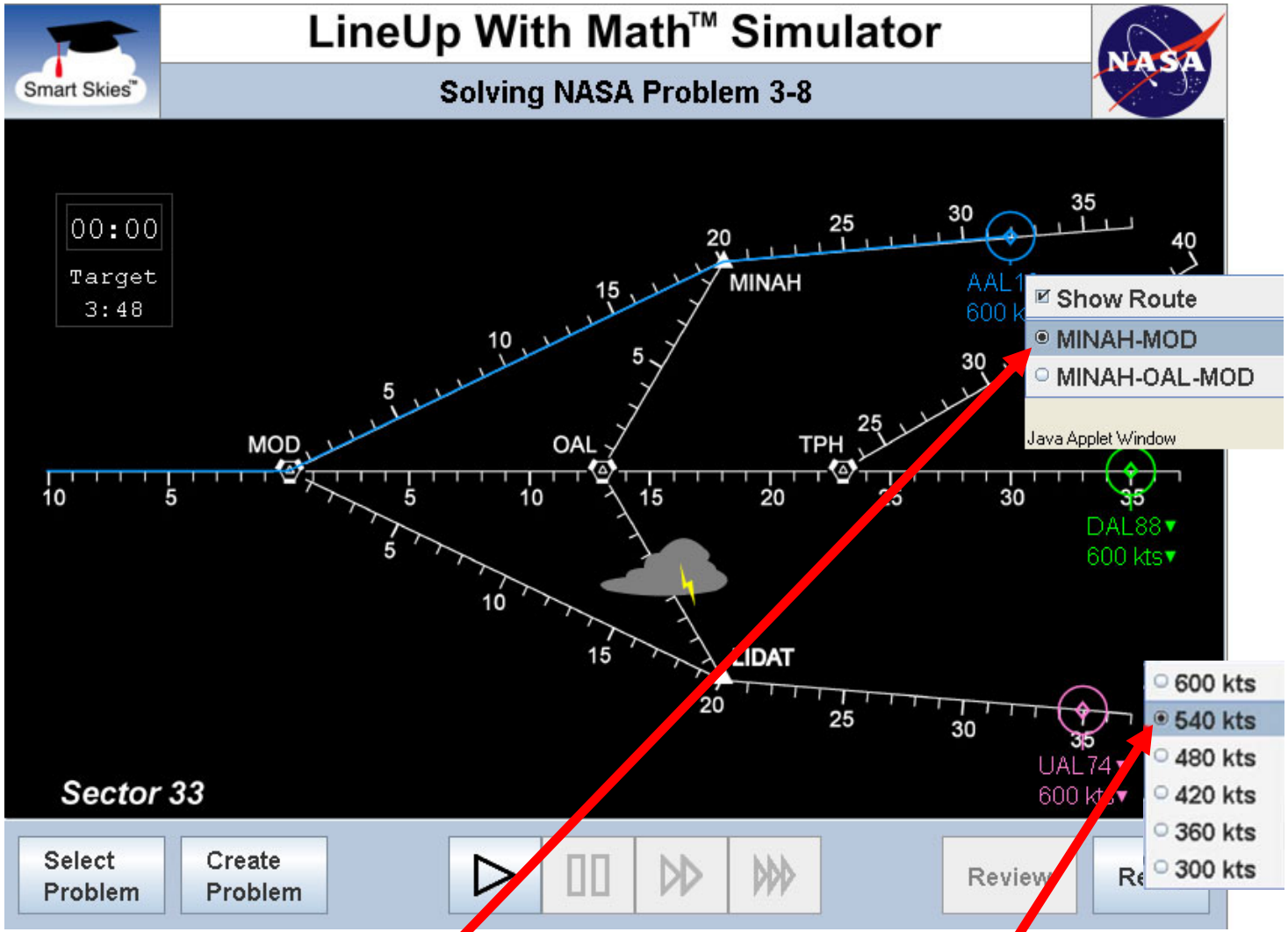
- Fast forward to show results at MOD. Target spacing = 3 NM.
- DAL88 is 3 NM behind AAL12. UAL84 is more than 3 NM behind DAL88.
- Time of UAL74 crossing MOD exceeds target time.

8. Reset and Try Again



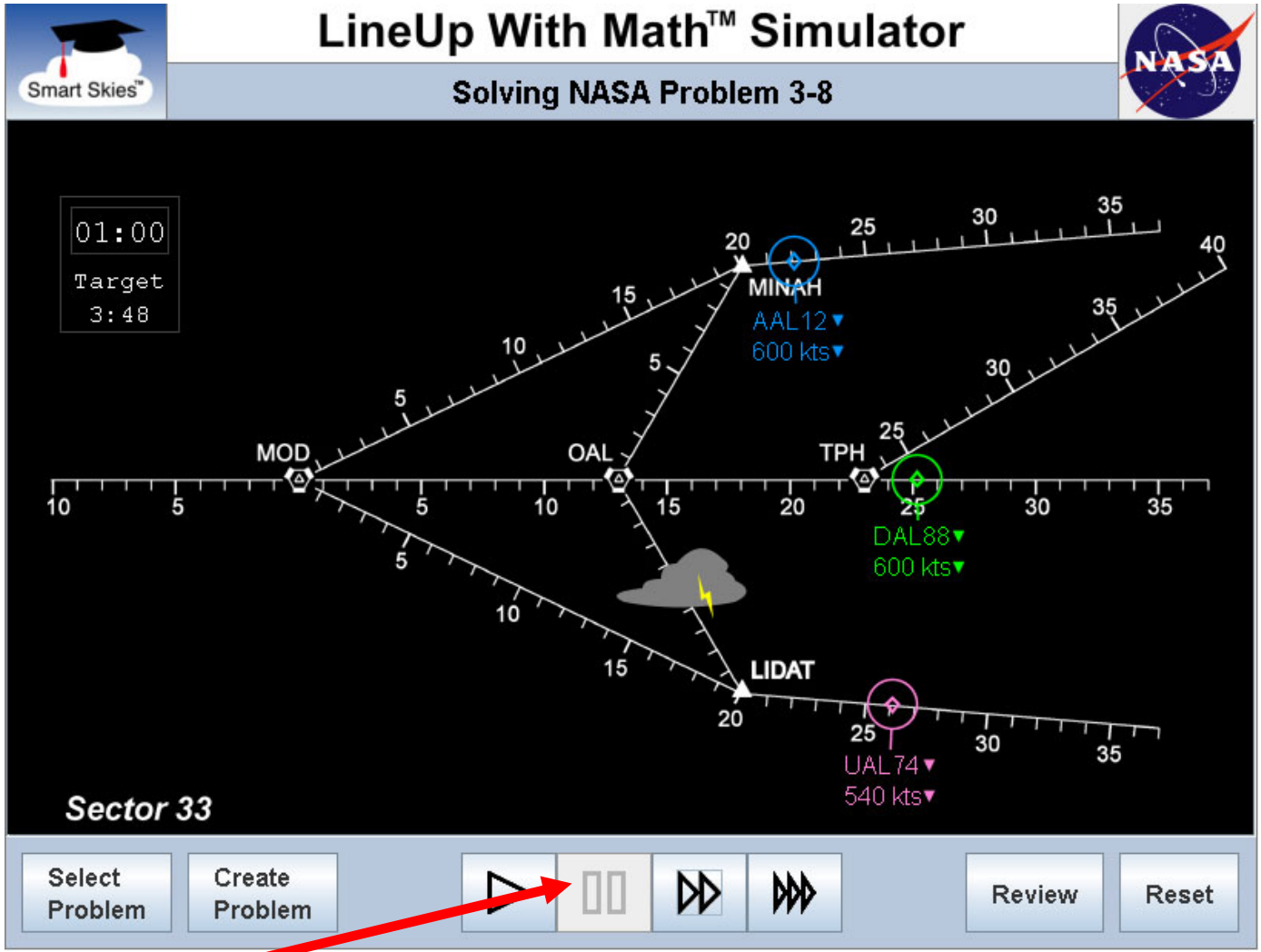
❑ Click the Reset button.

9. Change Route & Speed as Before



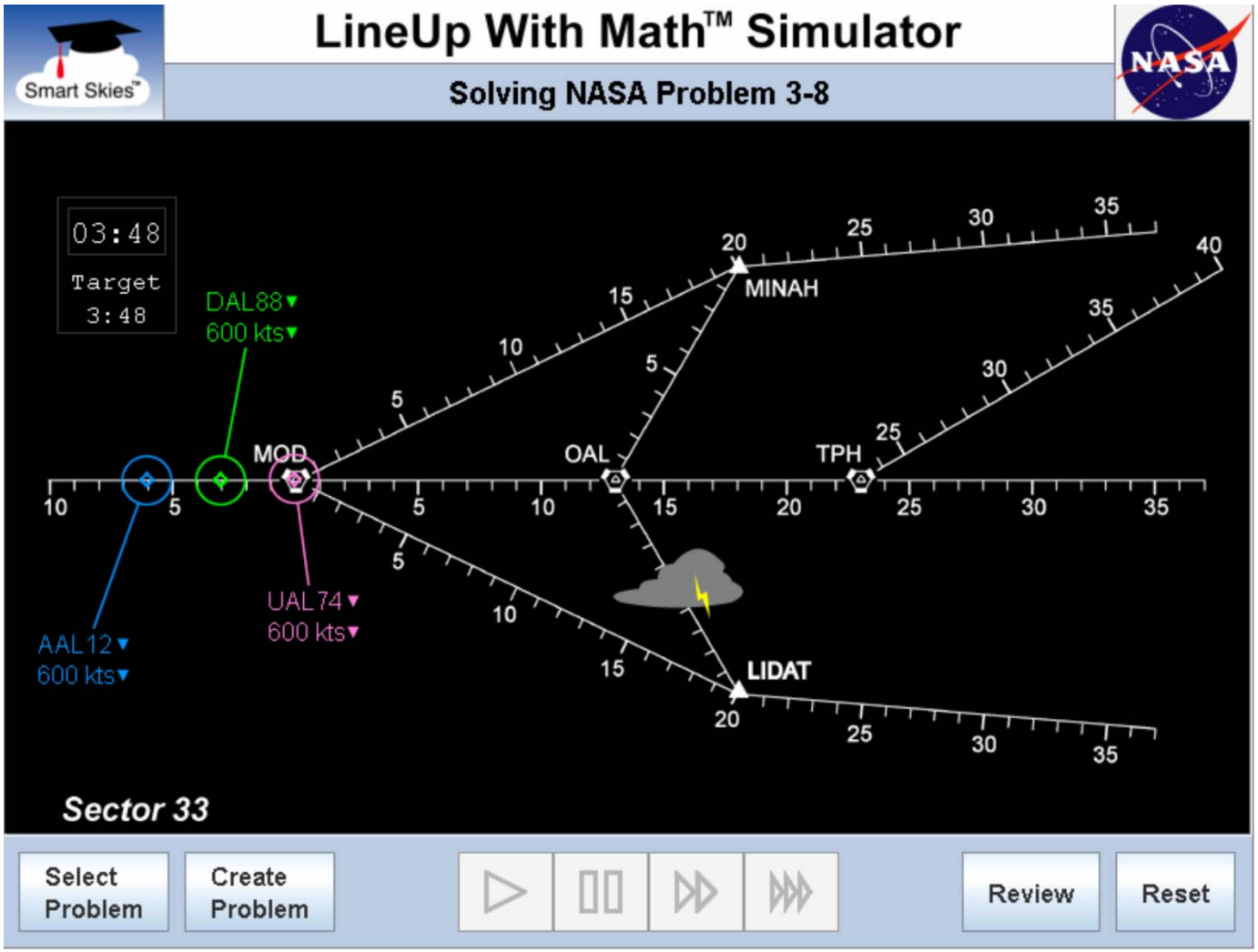
- Change route of AAL12 direct from MINAH to MOD.
- Reduce the speed of UAL74 to 540 knots.

10. After 3 Minutes, Speed Up UAL74



- Run the Simulator and pause at 1 minute, 2 minutes, 3 minutes.
- Note: UAL74 falls back 1 NM each minute.
- At 3 minutes, speed up UAL74 to 600 kts and run to completion.

11. Target Spacing & Time Have Been Met



- 3 NM spacing has been achieved with the last aircraft at MOD by 3:48.